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TOWARDS A FLEXIBLE FUTURE ? THE NATURE OF ORGANISATIONAL RESPONSE IN THE CLOTHING INDUSTRY.

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BY

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Abstract

In this contribution, the central questions concern the need for structural transformation, the diffusion of innovative organisational practices, and the dominance of particular organisational models in the Belgian clothing industry. In order to answer these questions, the results of two Trend Study surveys are used, covering a total of 104 companies: a 1995 survey among companies employing more than 50 workers and a 1996 survey in the segment of companies employing between 20 and 50 workers.

1. The extent of change

Despite the widespread interest in organisational transformation, our understanding of what has taken place in workplaces still is relatively poor. There is much rhetoric on the need for strategic change, whether it be through re-engineered corporations, greater worker empowerment through teams or simply through recognising the centrality of knowledge in high performance organisations. But there are still a lot of questions to be answered concerning the rate of diffusion of these transformations. Therefore the following issues ought to stand at the top of the research agenda:

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1. *Are structural changes becoming apparent?*

The picture of the 'transformed firm' that emerges in management literature probably overstates the rate of diffusion of new organisational practices and the degree of innovation actually taking place. Even academic studies of workplace change have tended to focus on best practice cases in an effort to measure the impact of workplace innovations on performance.

2. *Are structural transformations required?*

Can reforms at the margins of the Fordist-Taylorist model meet the challenges faced by production systems, or are structural transformations required? In most management literature, the Fordist-Taylorist model of the vertically integrated firm, devoted to mass production, is associated with rigidity and is pronounced to be unable to respond to the new challenges. This is seen as an argument for radical organisational transformation. Other approaches, such as the French Regulation theory, start from the perception that the current situation is a very mixed one in which old Fordist and Taylorist principles co-exist with neo-Fordist and neo-Taylorist ones, combining economies of scale with economies of scope and quick responses to the market (Boyer, 1991).

3. *Is a 'one best way' becoming apparent?*

Various production models have been launched in the past decade, all of which break with the Fordist-Taylorist organisational model at a number of important points: lean production (Jones, Womack & Roos, 1990), flexible specialisation (Piore & Sable, 1984), the Swedish style sociotechnical approach (Berggren, 1992), diversified quality production (Streeck, 1992), the new production concepts (Kern & Schumann, 1984), and business process re-engineering (Hammer & Champy, 1993). Research into organisational change needs to assess whether one of these models is dominant (in terms of degree of diffusion or in terms of effects on company performance). The central question here is whether there is in fact a 'one best way', or whether the models relate to one another as functional equivalents.

In this contribution, the central questions concern the diffusion of innovative organisational practices, the need for structural transformation and the dominance of particular organisational models in the Belgian clothing industry. In order to answer these questions, the results of two Trend Study surveys are used, covering a total of 104 companies (Huys, 1996; Huys, Stevens & Sels, 1997).

A problem arises here, however. The term 'innovative organisational practice' has no settled meaning (Ichniowski et al., 1996). For many scholars, it refers to employee involvement efforts such as work teams. Others have in mind flexible and broadly defined job assignments, improved communication or forms of profit sharing. One way to avoid this ambiguity is to check one of the 'new' production models in question as to its degree of diffusion. In this contribution, the model for

the new production concepts proposed by Kern and Schumann is taken as the 'norm'.

2. New production concepts

Kern and Schumann's observations in the machine tool, automotive and chemical industries led them to report a development which would threaten the position of Taylorism as the dominant production concept (Kern & Schumann, 1984). They observed the rise of *new production concepts*, which they saw as the result of a rationalisation process which the companies in question were being forced to accept in order to survive in the competitive international arena. At the same time, however, these concepts offered workers new opportunities. According to Kern and Schumann, capital had arrived at a point where a further rise in labour productivity could only be achieved by utilising what remained of 'living labour' in an entirely different fashion. Labour could no longer be considered a risk factor, something to be kept in line by means of a maximum division of labour.

The conclusions put forward by Kern and Schumann were strongly disputed in numerous other studies (Campbell, 1989). Researchers who attempted to test the general validity of their thesis concluded that the 'new production concept' distinguishes itself by conceptual vagueness. But their report was criticised primarily because of the restricted empirical basis for its conclusions. The fact that these conclusions were based only on a limited number of in-depth case studies meant that the need for more representative data was acknowledged on all sides. Schumann's SOFI research team bowed to this criticism (Schumann et al., 1991). In the *Trendreport Rationalisierung*, his team developed a methodology suitable for collecting representative data at periodic intervals on the production concepts applied in industry (Schumann et al., 1994).

The gauntlet was taken up in Belgium as well. The *Trend Study* was launched in 1991, developing from a similar ambition regarding methodology and substance (Huys, Sels & Van Hootegeem, 1995). The Trend Study focused on the automotive, machine tool, chemical and clothing industries. The methodological concept would have to guarantee that the findings at the level of each industry could be generalised.

For the Trend Study team, the initial challenge was to describe the term 'production concept' in such a way that it would be possible to distinguish traditional from new production concepts. Four components were examined in evaluating the diffusion of 'new production concepts': deconcentration linked to job integration, and product oriented production linked to job enlargement. Let us explain briefly.

2.1 Deconcentration and job integration

The crucial feature of Schumann's new production concept is the integration of supporting and preparatory staff services into the production divisions: trimming down of staff services, merging of staff and production departments, assignment of staff functions to the line management (Schumann, 1988). In the Trend Study, a distinction was made between concentration and deconcentration. *Concentration* means that separate staff services fulfil the various functions related to planning, programming, maintenance, quality assurance, etc. These services then offer support or prepare the work of all production divisions. Another option is to allow these 'indirect' functions to be merged with production. In that case we speak of *deconcentration*.

If companies opt for a maximal concentration of supportive and preparative functions, production divisions are supposed to direct all their efforts towards production. *Segregated* production jobs, consisting exclusively of direct production tasks, are the result. In Taylorist production concepts, such a removal of indirect tasks from production jobs is advocated. Once preparatory or supportive functions are deconcentrated and integrated into production divisions, there is more room for *integrated* production jobs consisting not only of direct production tasks, but also of preparatory (e.g. programming, tool setting) and supportive (e.g. maintenance) tasks.

While deconcentration is a necessary prerequisite for more integrated production jobs, it is by no means sufficient. A move towards deconcentration may well lead to more heterogeneous production groups, while leaving the profiles of production jobs unaltered. For instance, this is the case when deconcentrated programming tasks are allocated to specialised programmers, who work nevertheless in the production division. Only when the separate job of programmer has been 'dismantled' can the path be cleared to creating integrated jobs for the production workers.

2.2 Product oriented production and job enlargement

As far as production is concerned, firms can choose between three basic structures, by which we mean alternative ways of organising the flow of the production process:

- In an *operation oriented* structure, identical operations are grouped into production divisions or groups. The order of sequence is relatively open. The operation oriented structure is more amenable to this type of flexible linking than the flow and product oriented structures. But this high level of flexibility comes at a price: a relatively low level of productivity. Operation oriented structures are often characterised by long routing times and large intermediate stocks.
- As soon as the sequence of operations is more or less fixed, the operation oriented structure tends to develop into the second variant, the line or *flow oriented* structure. The products go through all of the necessary operations in a

fixed and sequential order. The link is clear: there is one sequence, one route, the process is highly structured but at the same time non-adjustable. The strength of the flow oriented structure is said to be a relatively high potential productivity. Its weakness is the limited product mix and volume flexibility.

- In a *product oriented* structure, one product is (largely) finished in a clearly demarcated processing phase. Each production division or group makes one type of product. The operations and machine tools required to perform that one product are grouped together. The link between the processing steps is clear. The process moves in one direction, but takes multiple routes.

Product oriented production is supposed to be most suitable for keeping down the number of co-ordination problems in an unstable environment. Conversion from a flow oriented to a product oriented structure is supposed to lead to an increase in flexibility, with productivity being held constant; and conversion from an operation oriented to a product oriented structure to an increase in productivity, with flexibility being held constant (De Sitter, 1994).

The nature of the production structure determines whether job enlargement is possible. Indeed, within a division or production group only those tasks which are also effectively assigned to that division or group can be grouped as jobs. This is determined by the structure of the production process. Since in flow and operation oriented structures production divisions specialise in one or a limited number of operations, these are admirably suited to fulfilling the Taylorist ideal of *narrow* jobs (consisting of short-cycle, repetitive tasks). By contrast, in a product oriented structure a number of operations required for the production of a single product are brought together. This versatility can be translated into *broad* jobs which group together a wider range of tasks.

Table 1. Traditional versus new production concept

Traditional	New
Flow or operation oriented	Product oriented
Concentration	Deconcentration
Centralisation	Decentralisation
Narrow jobs	Broad jobs
Segregated jobs	Integrated jobs

The various dimensions of the division of labour can be assembled to form a multi-dimensional analytical framework which enables us to describe both traditional and new production concepts. They are listed in Table 1.

3. New production concepts in the clothing industry

Employment in Belgian clothing manufacturing has fallen constantly in recent decades. This situation is not an isolated national phenomenon, but typifies the

entire Western European clothing industry. Prospects for the future are anything but promising. The Institut Français de la Mode estimated a fall in employment of 34% in European clothing manufacturing between 1992 and 2002. The sewing sections in particular would be hard hit by a reduction of 48% (IFM, 1994).

In the Belgian clothing industry, the share of wage costs in the added value amounts to an average of 78% - costs which are concentrated in the sewing sections (IVOC, 1996). Micro-electronic sewing machines have been introduced into some sewing sections, facilitating the delivery of a pre-programmed number of stitches complemented by an automatic cut off on completion. Additionally, twin needled machines have been developed and have proved to be useful for decorative stitching. Notwithstanding these advances, however, the gains made by the introduction of new technology into the sewing sections lag far behind those in other areas in the textiles and clothing industries (Baker, 1993). It is often assumed that relocation of this labour-intensive production phase to low labour cost countries will transform increasing numbers of companies into 'rear-end' companies, which concentrate on the production stages prior to (designing, pattern cutting, etc.) and subsequent to the sewing operation (finishing).

At the same time, manufacturers are expected to accommodate ever diminishing 'turn round' times between the placing of the order and the delivery. This has been accompanied by the move to shorter runs of garments as retailers change styles and fashion more regularly to further segment their markets and maintain the interest of their customers. This increasingly forces the manufacturers into a 'quick response' (Eysackers, 1994). Developments in clothing distribution increase the pressure even further. The market share of the independent retailer has fallen, in favour of that of the store chains (Scheffer, 1992). These are in a stronger market position and are succeeding in shifting their stock problems on to the manufacturers. They often record only part of their turnover from initial orders. The rest is ordered later, if the product goes well.

Certain clothing companies have benefited from the reduction in run lengths and shortening of lead times as their geographical proximity to domestic retailers gives them an advantage. However, at the same time it can be assumed that these quick response demands exert the necessary pressure on the dominant production concept. This contribution examines which measures the companies are taking to respond to these demands. What are the repercussions for the structure of the production process? How do companies acquire the necessary flexibility? In order to answer these questions, the results of two Trend Study surveys are used.

In 1995, a survey was organised among companies employing more than 50 workers (**Survey 1**). For this purpose, two standardised questionnaires were compiled, starting from the conceptual framework outlined above: one assessed the changes in personnel management and industrial relations and was intended for the personnel manager; the other assessed organisational innovations and was intended for the production manager. The questionnaires were handed out within the companies by trained assistants. During an interview with potential respon-

dents, the contents of the questionnaire were explained. The respondents were given two weeks to complete the questionnaires. Once these two weeks had elapsed, an appointment was made for it to be personally collected by one of our assistants.

Belgium has 60 clothing manufacturers employing more than 50 workers. Six of these companies were deliberately not approached because they completed a similar questionnaire in 1994 on behalf of an international research into the garment industry by the Dutch NIPG (Dhondt and Peeters, 1994). Of the remaining 54 companies, 48 completed both questionnaires. Since the available NIPG data are also used, some items in this contribution relate to 54 companies employing 5,467 employees, 2,761 of whom are in the sewing divisions. Given that the data presented here relate to 90% of the clothing manufacturers with more than 50 employees, we can say that the results of this survey are representative.

In 1996 an additional survey was organised in that segment of companies employing between 20 and 50 workers (**Survey 2**). These small companies were approached using a scaled-down version of the questionnaires which were used for the first group of companies. Fifty small companies employing a total of 1,496 employees were willing to participate, which represented a 52% response rate. As in Survey 1, Survey 2 was also geared towards the sewing sections. In quantitative terms, the seamstresses represent by far the most important function. In the 'small companies' (Survey 2) this one function accounts for 60.3% of employees. In the 'large companies' they represent 52.1% of employment.

This contribution provides answers to four questions:

1. *Are the quick response demands a reality for the Belgian clothing industry and how do companies attempt to respond to them?* (§ 3.1)
2. *Do these quick response demands lead to the wide dissemination of product oriented production?* (§ 3.2) In garment manufacturing, product oriented production is associated with a paralleling of the production process into product groups. These then take the form of modules in which the seamstresses are responsible for finishing an entire product.
3. *To what extent can initiatives be found for the deconcentration of preparatory and support functions and decentralisation of decision-making?* (§ 3.3) Deconcentration means that the production management assumes broader responsibilities regarding maintenance, quality assurance, work preparation, etc.
4. *Are there signs of the processes of job enlargement (§ 3.4) and job integration (§ 3.5) ?* Product oriented production facilitates job enlargement. Seamstresses then perform more sewing operations or rotate among more work stations. Job integration implies that seamstresses not only have 'direct' production tasks, but are also responsible for the work preparation (order, method), some of the machine maintenance, quality control within the group, internal transport and independent balancing within the group.

3.1 Quick Response

Bolwijn and Kumpe (1994) developed a model which suggested a significant evolution in performance criteria. While competition in the nineteen sixties revolved around cheaply manufacturing large quantities (efficient firm), in the nineteen seventies the emphasis shifted to quality (quality firm). In the nineteen eighties, the demand for the rapid manufacture and delivery of small variable series was added to the list (flexible firm). By the nineteen nineties, companies were being challenged to portray themselves in terms of their innovative capacity: being able to offer customised made-to-measure clothing (innovative firm).

When questioned about the performance criterion which is considered the most crucial, the small garment manufacturers place the aspects 'delivery time' and 'flexibility' at the top of the list (Survey 2). Only the 'production quality' aspect scored slightly more highly among the large companies (Survey 1). The minor importance of the 'productivity' criterion indicates that the clothing companies are aiming at a market segment where price is no longer the sole - or even the primary - criterion. Furthermore, innovative capacity is not regarded as an essential competitive weapon. This aspect undoubtedly plays an important role in designing, but is not of prime importance for production companies. Clothing companies must therefore rather be described as *flexible firms*.

This flexibility is expressed chiefly in the large share of production to order (Table 2). Companies no longer sell what they manufacture, instead they manufacture what they sell. Moreover, this production is *small batch* production, with an average of 400 pieces.

Table 2. Share of the volume made to order in large and small companies (in %). n=47 large (Survey 1) / n=47 small companies (Survey 2)

% of volume made to order	0-50%	51-75%	76-90%	91-99%	100%	
Small companies	8.5	4.3	8.5	19.1	59.6	100%
Large companies	12.8	10.6	14.9	12.8	48.9	100%

The term 'flexibility' refers both to the volume and to the varieties. Production to order does not only mean that what is manufactured is what the market demands at a certain point in time (flexible change-overs from one variety to another if required), but also that it is flexible in the quantity demanded (adaptation of the volume or production quantity to fluctuations in demand).

Volume flexibility. If there is a lack of orders, Belgium's flexible regulations in this respect allow the system of temporary unemployment to be utilised. Using this system, companies can make temporary and partial use of unemployment allowances to pay their excess staff. This enables companies to restrict redundancies during lean periods. In 1995 the small companies made use of an average of 44

unemployment days per worker (survey 2; n=42). All but one of the large companies made use of this system in 1994 (survey 1; n=48). An average of 31 working days per worker were spent in temporary unemployment.

The use of temporary unemployment allows companies to respond to volume flexibility by acting on the level of working and operating times. An alternative is to use flexible forms of contract. It is striking that little use is made of numerical flexibility. Thus, only 5.6% of staff are on fixed-term contracts (expressed in full-time equivalents), an average of 2.2% on interim basis and only 2.7% are employed using systems of subcontracting. The use of homeworking is a marginal phenomenon. Only five out of 54 large companies mention a total of 71 homeworking seamstresses.

It must be noted, alongside these figures, that the system of temporary unemployment can to a large extent be seen as a functional equivalent of the large-scale use of contractual flexibility. Specifically, the system allows companies to adjust the number of long-term contracts to maximum capacity. If this is not achieved, they can fall back on the system of temporary unemployment. Abolishing this system - which is currently under consideration in view of its heavy toll on the social security system - could thus lead to an increase in numerical flexibility and atypical employment.

Variety flexibility. In order to be able to comply with increased variety flexibility, companies can be expected to be more likely to change their production and work organisation. A far-reaching division of labour (flow or operation oriented production, concentration, centralisation, job segregation) seems to incorporate disadvantages on the volatile quick response market (Taplin, 1995). Specifically, in an organisation with much division of labour, this volatility threatens to lead to a rise in co-ordination problems. Below we examine to what extent this division of labour is being dropped and whether product oriented production, deconcentration, decentralisation, job enlargement and job integration have made inroads.

3.2 Product oriented production

Two types of production structure are often compared and contrasted in the clothing industry: operation oriented and product oriented structures.

Operation oriented. In an operation oriented structure, identical operations are grouped into specialist production divisions or groups. As we mentioned before, operation oriented structuring is, in theory, very flexible because a wide variety of products can be made, thanks to flexible routing. However, this route flexibility translates into very complex scheduling and poor transparency in the course of the process.

The bundle system is a particular example of operation oriented manufacturing in the clothing industry. In bundle production, work is highly fragmented and 'deskilled' (Berg et al., 1996). Each operation is done by a single seamstress oper-

ating at a stationary sewing machine (Dunlop & Weil, 1996). Each seamstress receives a bundle of unfinished garments. She then performs a single operation on each garment in the bundle. When the seamstress finishes a bundle, it is placed in a buffer with other bundles that have been completed to that point. The bundles in the buffer are then ready for the next station in the sequence.

The bundle system is designed to minimise the total amount of direct labour and labour cost in each garment. By isolating each station and preventing problems in one operation from spreading to others, the system also allows for maximum utilisation of equipment. However, in bundle production maximum utilisation of equipment often becomes an end in itself. Large batches are therefore given preference because less capacity is lost to machine setting. Moreover, large buffers between assembly operations are built up so as not to allow the stock of machines to become idle and thus to guarantee that fluctuations in production volume are not to the detriment of maximum utilisation of machine capacity. These structures therefore lead to a large amount of in-process inventory, long routing times and delivery times which are difficult to manage.

Product oriented. Product oriented production is based on a fundamentally different notion. Rather than breaking up sewing and assembly into a long series of small steps, product oriented production entails grouping tasks (e.g. related to the entire assembly of a specific model or a large part of a garment) and assigning those tasks to a clearly demarcated product group.

The more team-based technique of modular assembly is a highly typical example of product oriented production in the clothing industry. Teams of cross-trained workers, organised into small groups (modules), together assemble an entire garment (Taplin, 1995). The modules are separated from each other. The product flow is therefore much more transparent than it is in the bundle system, where the many routings make production planning more difficult. Throughout the 1980's, modular production was heralded - in the U.S. in particular - for reducing work-in-process inventory, increasing quality, enhancing workforce performance and improving the 'external fit' between work organisation and new competitive forces affecting the clothing industry. Moreover, advocates argued that modular assembly improves the desirability of employment in the clothing industry by increasing task variety (Peeters, 1995; Dunlop & Weil, 1996).

In this context, it is important to note that the concept of modular production has a more restrictive meaning than the highly general principle of product oriented production. The term 'product oriented production' is used to define a broad category of organising principles with particular common features. Modular production is a specific model, based on the principle of product oriented production, but encompassing a number of additional features: team-based supervision, a high degree of self-direction by team members, multiskilling, a considerable modification to classical HR practices, etc.

Only Survey 1 assessed the spread of operation oriented, product oriented and flow oriented production structures. This was carried out at two levels. In many large companies, the sewing division is further subdivided into production sections. First of all, the way in which the various sections in one sewing division are mutually linked was examined, followed by the way in which the various work stations or individual operations and machines within the respective sections are linked or grouped. As the following table indicates, product oriented structuring is dominant at the first level (e.g. one section assembling skirts, another section assembling waistcoats, a third one assembling blouses). The operation oriented structure - geared towards the grouping together of similar operations and machines - is the most widespread at the second level.

Table 3. Production structure in the sewing sections

	Link between sections ¹	Link between work stations ²
Flow oriented	12.0%	11.3%
Operation oriented	36.0%	46.3%
Product oriented	52.0%	32.5%
Whole piece system	/	9.8%

¹ Concerns the way in which the various sewing sections in one sewing division are mutually linked (n=25 sewing divisions of companies counting more than one sewing section in the sewing division)

² Concerns the way in which individual work stations are mutually linked in sewing sections (n=123 sewing sections of 48 large companies)

We should note that the system of 'whole-piece production' can occur as a variation of product oriented production. The paralleling into product modules has been taken to its extreme in this case. A complete product is made at every work-station.

In product oriented structures, a sewing section has all the machines which are needed to make a product. The company must provide 'overcapacity' (extra machines) which means a sharp fall in the seamstresses/machines ratio. The utilisation of equipment is therefore relatively low. Survey 1 did indeed reveal that the operation oriented structure regarding machine yield scores much better than the product oriented structure. In operation oriented structured sewing divisions, the utilisation of machine capacity is 78% on average, which is considerably higher than the 46% which was recorded for the divisions with a product oriented structure. Product oriented systems, however, do have other assets, such as a manageable throughput time. The short throughput times and the transparency of the product flows do, furthermore, lead to manageable delivery times. Therefore, product oriented production is not geared to maximising the yield of individual work stations, but rather to increasing the quality and flexibility of the process as a whole.

To our surprise, however, no relationship was observed between the nature of the production structure and 'flexibility performance', measured using the number of models made, the importance of production to order, the importance of flexibility as a performance criterion and the number of customers. Comparable surveys also fail in this respect. Thus Dhondt and Peeters (1994, 40) state, after a survey of Dutch garment manufacturing: "the first hypothesis with respect to the link between production situation (unpredictability, complexity) and the production concept implemented does not, after testing, produce any firm conclusions". Various explanations are possible for this. An initial possibility is that the population is too heterogeneous to be able to measure significant differences on the basis of this indication. A second possible explanation can be found in the faulty implementation of the concept of 'flexibility performance'. Thus, an indication of the delivery times achieved is missing.

3.3 Deconcentration and decentralisation

At a *first level*, deconcentration implies that staff services are cut back and split up and that the distinct production divisions have their own 'customised' operational support group (cf. Figure 1).

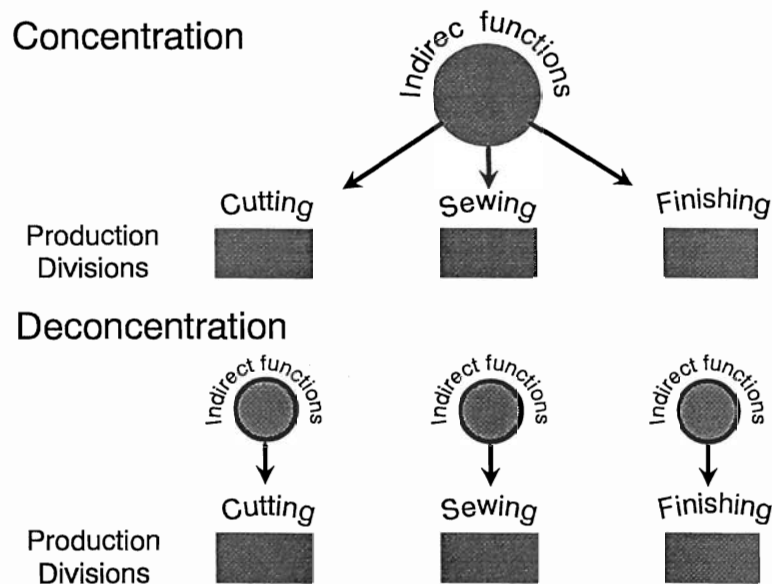


Figure 1. Concentration and deconcentration at the first level

At a *second level*, deconcentration means that a quality controller, a maintenance mechanic, a designer, a labour analyst and/or a production planner is allocated to the various sections or seamstress groups within, for instance, the sewing division. In the average company, the number of indirect functions is so limited (14% of the number of employees) that such far-reaching deconcentration is hardly realistic. The first form, which does however leave the division of labour in the sewing division untouched, is quite widespread. In practice, every sewing division has a

handful of staff which is sufficiently versatile to be able to perform the necessary operations in all sewing sections. The urgency of these operations, partly as a result of the reduced capital-intensive nature of the work, is low. The presence of buffers between most work stations also reduces the urgency and therefore the need for permanent support in every sewing section.

If the demand for deconcentration tendencies may be less relevant in the clothing industry, it must be said that the appropriate degree of *decentralisation* is hotly debated. The sewing division is traditionally led by the workshop management. Heading the various sewing sections or seamstress groups of the sewing division, there is often a first-line supervisor, acting as intermediary for enlisting support functions and fulfilling a key role in the operational planning of the process (allocation of seamstresses to work stations, following up logistics, adjusting production flow as a function of deviations in planning, carrying out rebalancing). This supervisor is often also responsible for quality control and fault analysis, training and evaluating seamstresses and making holiday arrangements.

The literature frequently speaks of a transformation, if not an erosion of the job profile of the first-line supervisor (Eysackers, 1994; Peeters, 1995; Roelandt, 1995). A number of tasks would be taken over by the seamstress groups, while the supervisor's role would evolve into a coaching function and she would devote more time to process improvements. Eysackers (1994) even mentions a 'pincer movement' around the first-line supervisor's job, where a number of administrative tasks would be integrated into the job profile of the seamstresses, on the one hand, and certain decision-making powers would be shifted towards staff functions, on the other hand.

This supposed evolution is often linked to the transformation of operation and flow oriented into product oriented structures. Since the orders can follow different routes, an operation oriented structure requires intensive planning, control and co-ordination. In a product oriented structure a complete (partial) product is assembled by a seamstress group so that, in principle, harmonisation can take place within the group. This reduces the need for external control and the span of control can be increased. In extreme situations, this evolution can give rise to a situation where a supervisor co-operates or the seamstresses take turns to act as supervisor.

First-line supervisors co-operating with seamstresses are in no way exceptional in garment manufacturing. However, this often only affects a limited part of the working time. Full integration of the supervisor's tasks into the job profile of the seamstresses occurs in only one large company. The table below reiterates this analysis.

Table 4. Presence of co-operating first-line supervisors

<i>Role of first-line supervisor</i>	Sewing divisions of small companies ¹	Sewing sections of large companies ²
Non-co-operating first-line supervisor	62.0%	60.7%
Co-operating first-line supervisor	38.0%	31.9%
No separate first-line supervisor	0.0%	7.4%

¹ 50 sewing divisions of 50 small companies (Survey 2)

² 122 sewing sections of 48 large companies (Survey 1)

It is not true to say that the job of supervisor is being eroded. In the vast majority of companies, hardly any administrative tasks are delegated to the seamstresses. In this respect, companies with a system of co-operating first-line supervisors barely differ from the other companies. In terms of the decentralisation of administrative power, nothing much is changing in the clothing industry.

3.4 Narrow jobs

In the majority of companies, the seamstresses take an average of between one and two minutes to complete their tasks (Table 5). Sewing may therefore be described as short-cycle. Each seamstress is responsible for a certain limited number of operations, after which she passes on the piece to the following work station. It is striking that, in the small companies, cycle times are similar to those in the large companies.

Table 5. Average cycle times (percentage division) for seamstresses in sewing rooms of larger (N=119 sections) and smaller companies (N=48 sewing divisions)

<i>Cycle times</i>	< 0.5 min	0.5 - 1 min	1 - 2 min	2 - 5 min	5 - 10 min	> 10 min
Large companies	5.0%	26.9%	36.1%	23.6%	5.0%	3.4%
Small companies	8.3%	27.1%	22.9%	27.1%	4.2%	10.4%

The ever increasing range of single operation machines encourages the short-cycle character of garment manufacturing. Numerous single operation machines have been developed depending on the stitch (hand stitch, chain stitch, running stitch), the seam (straight, zig-zag, overcast, flat), the transport movement (ordinary, double, triple, differential), the material, etc. Survey 1 shows that 49% of the sewing machines can currently be described as single operation machines. Universal machines represent only 6% of machinery; semi-automatic machines barely 4% (n=4.341 sewing machines; 54 companies).

This technical evolution has an impact on the division of labour. Short-cycle work is virtually unavoidable for optimum utilisation of the machines geared

towards specific operations. As Banke and Binder (1992) correctly note: "Having this focus in developing new machinery the suppliers simply take the Taylorist paradigm for granted and they are thereby unreflectedly furthering a particular kind of work organization".

It is notable that multifunctionality of the seamstresses (understood to mean switching between work stations) also remains limited. This observation applies in particular to small companies. In 43.8% of the small companies seamstresses are allocated to one workstation (Table 5). Only 20.8% of these companies have introduced systems of frequent rotation between several or all work stations (compared to 37.3% of the large companies). The Trend Study team expected higher multifunctionality, particularly in the small companies.

Table 5. Degree of multifunctionality in large (n=123 sections) and small companies (n=48 sewing divisions). In percent.

	Small companies	Large companies
One station, one operation	6.3	17.9
One station, several operations	37.5	14.6
One station, occasional back-up	35.4	30.2
Frequent rotation between several stations	12.5	34.9
Rotation between most or all stations	8.3	2.4

Product oriented production is often associated with what is known as 'standing sewing'. Standing work enables seamstresses to change work station frequently and quickly and is, in that sense, a condition for far-reaching multifunctionality. Standing work puts the seamstresses in a position to take over the work of others quickly if there are bottlenecks on production progress or to balance out the work themselves. It is therefore associated with a concept of teamwork, where a higher level of responsibility is given to the seamstress in terms of controlling the process.

Standing work is integrated into particular production systems, such as the Toyota Sewing System and Quick Response Systems (Peeters, 1995; Roelandt, 1995). For example, in the Toyota Sewing System, each seamstress performs various operations on one product. She works standing up, moves along with the product and thus passes various machines operating alongside one another. In this sense, the job is enlarged. In small companies, however, standing work occurs only in one out of fifty sewing divisions. In the large companies, this method is only a reality in 7 of the 123 sewing sections examined (5% of seamstresses). These are always sections with a product oriented structure.

One important observation is that the introduction of generalised multifunctionality faces several obstacles. Below we name the most serious of these.

Highly segmented job classification. In the majority of companies the operations at various work stations in the sewing division are charged to various job and pay

grades (Table 6). Multifunctionality can only be generalised if this goes hand in hand with a levelling out of the job and pay grades. This levelling out will probably only be accepted if it is an 'upwards' levelling out.

Table 6. Number of job grades for seamstresses in the sewing room (survey 1; n= 37 sewing divisions)

Number of job grades	1	2	3	4	5	6
Number of sewing divisions	13	5	10	6	2	1

Mistrust regarding multifunctionality. Despite their complaint against the highly repetitive nature of short-cycle work, the trade unions are often mistrustful of multifunctionality. It is interpreted as a way of 'stopping gaps' (CCTKB, 1992). Someone who is multi-employable can be moved somewhere else if there is a technical breakdown or underutilisation. Interchangeability means that the company is able to use a minimum workforce. This enhances the conviction that more multifunctionality is the same as higher work pressure.

Tension with compensation practices. In (progressive) bundle systems, each task in the assembly process has a target 'standard allocated minutes', representing the total amount of direct labour time required (Dunlop & Weil, 1996). Compensation practices are often partly based on the worker's rate of production relative to this target. Sticking to this kind of performance related pay or to direct individual piece rates does not motivate the seamstresses to acquire wider versatility, since the more sewing operations one has to be able to do, the more difficult it becomes to perform each operation at high speed.

Table 7. Financial incentive or bonus practices, related to the degree of multifunctionality (survey 1; n=115 sections)

	Group incentive	Individual incentive	No financial incentive	
One station, one operation	0.0	4.3	95.7	100%
One station, several operations	0.0	9.1	90.9	100%
One station, occasional back-up	9.7	51.6	38.7	100%
Rotation between several stations	64.4	11.2	24.4	100%

The table examines the relationship between the degree of multifunctionality and the presence and nature of financial incentive or bonus systems. The analysis is confined to the large companies (survey 1). The reason for this is that none of the small companies mention incentive or bonus systems (survey 2; n=50). This means that not one small company uses variable remuneration techniques.

The figure clearly shows that, in companies where seamstresses are tied to one work station, variable or flexible wage components are virtually unheard of. This

is, in itself, a surprising observation, since a wide spread of individual bonus or piece rate systems was expected precisely in those companies. In companies where multifunctionality remains confined to exceptional back up at other stations, individual incentives are chiefly used. More generalised multifunctionality would have to go hand in hand with an abolition of individual incentives or bonuses, and conversion to a straight hourly rate, an hourly rate with a group incentive or bonus, or a compensation scheme in which the pay of team members is tied to the team's daily or monthly output. The figure shows clearly that group incentives are already widespread in systems with frequent rotation between several stations.

3.5 Segregated jobs

Whatever the cause of the limited multifunctionality is, its consequences are far-reaching. Specialisation in a partial operation does not only imply repetitive job content, but it also slows down the delegation of responsibilities across the production process. Employees who frequently change work stations are given the opportunity to build up a better picture of their own contribution to producing the product. This makes it easier for them to take part in decisions which transcend their own work stations. Employees who are familiar with each other's tasks find it also easier to consult each other and to co-operate; in other words, to integrate a number of organisational responsibilities into their package of tasks. It will be evident from what follows that these forms of integration are not on the agenda in the sewing divisions.

Within the framework of forms of teamwork, seamstresses should be able to play a role in the practical interpretation, follow-up, adjustment or improvement of production planning, working methods or the work order. However, Figure 2 shows that these *preparatory tasks* remain the prerogative of the supervisor. What the figure does not show is that the scores for the small companies are more or less identical to those for the large companies.

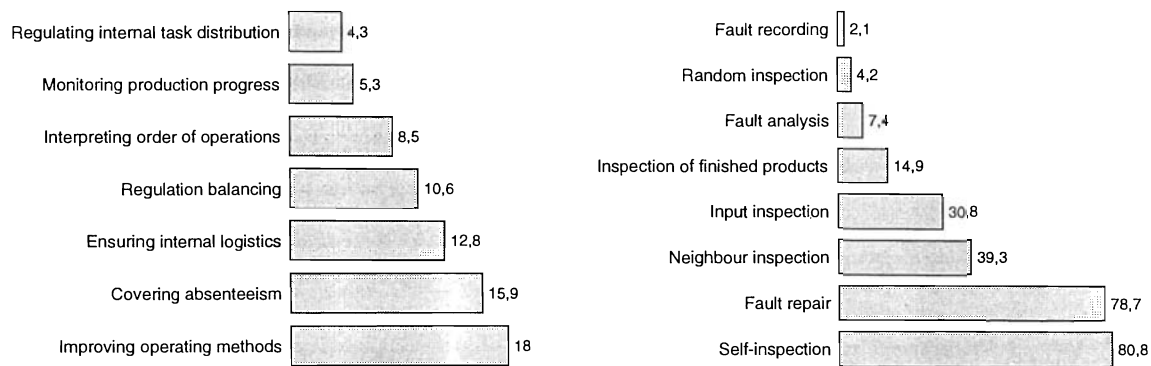


Figure 2. Percentage of companies delegating planning tasks (left) and quality control tasks (right) to the seamstresses (n=94 companies)

Given that *product quality* was indicated as an essential performance criterion, the seamstresses could be expected to be given greater responsibility at this level. After all, one of the priorities of good quality is to prevent faults or, if necessary, to repair them immediately rather than having to notice them at the end of the process. In this scenario the seamstresses would be responsible for input inspection, inspecting the work of neighbours and self-inspection. The staff functions would then concentrate more on in-depth, random checks and structural adjustments ('kaizen').

Figure 2 shows that tasks such as checking one's own operations, repairing one's own faults and critically looking at the predecessor's work is part of the normal work of the seamstresses. Close self-inspection is supported by a quality bonus or by a piece rate, where 'seconds' (second choice products) are not included in calculating the bonus or piece rate. The fact that the seamstresses have to repair their own faults (and therefore cannot push up their output) also encourages them in close self-inspection. It is also noticeable from the profile that the contribution of the seamstresses is limited to quality aspects which relate to their own work station. Quality control which transcends the individual operating stations (input and final checking, fault analyses, audits) is outside the responsibility of the seamstresses. This is not surprising, given their limited versatility.

As far as *maintenance tasks* are concerned, tasks such as replacing needles, adjusting tension, keeping the machine clean and setting the stitch size form part of the job profile of the seamstress, in both the small and the large companies. However, a number of maintenance tasks require some technical knowledge, which is less suited to the seamstresses' training. These tasks are very rarely integrated into the profile: assembling guides, fitting templates, lubricating the machine, setting the machine speed and replacing machine components.

If we arrange all the profiles in a list, it must be concluded that the assumed pressure from the environment does not result in a radical new organisation of work neither in the large nor the small companies. The seamstresses primarily

have to work quickly and without mistakes and do not have to worry about matters above and beyond the work station.

We stated earlier that systems of product oriented manufacturing are a necessary condition for job enlargement and that this way of structuring also simplifies the integration of indirect (preparatory and support) tasks in self-regulating production teams. In this type of self-regulating team, the members themselves are responsible for inspecting the quality of the finished product and for production monitoring. The team is also free to decide which operations are to be performed by which seamstresses. Moreover, as a result of their versatility, the team members can flexibly be allocated to work stations. However, it must be concluded that the introduction of product oriented structures is in no way a sufficient condition for job enlargement and job integration. If we compare the companies with an operation oriented structure with those which take a product oriented division as a basis, only minimal differences in job content are recorded.

4. The delayed transformation

The clothing industry has to contend with a number of environmental conditions, which could accelerate the transformation towards 'new production concepts'. Although the demands regarding quality, flexibility and delivery time have also become considerably tighter in the other sectors covered by the Trend Study (car assembly, chemicals and machine tools), quick response behaviour is, particularly for the garment manufacturers, an absolute necessity. The Trend Study team expected the quick response performance requirements to bring to the surface a number of dysfunctions in the Taylorist production concept; that the circumstances were ripe for achieving a breakthrough towards an organisational structure geared to quality and flexibility, linked to a 'mobilisation' of human resources (De Sitter, 1994).

Although hopes were high, we nevertheless have to conclude that the clothing industry is the most traditional of the sectors investigated. Again, we list our main findings:

- *product oriented production.* Forms of product oriented production have indeed made inroads in a minority of companies, but have not led to the predicted spread of semi-autonomous teamwork, standing work or job integration.
- *deconcentration.* Staff departments are either slim or completely absent, as the low level of automation requires only limited assistance. Questions concerning deconcentration are therefore less relevant to this sector. The most important conclusion is, in any event, that the existing indirect functions (supervisor, production planner, labour analyst, quality controller, mechanic) are the least under threat of abolition.
- *decentralisation.* The present level of decentralisation is the subject of much debate. The literature mentions an erosion of the job profile of the first-line supervisor as a result of the integration of indirect tasks into semi-autonomous

teams. However, the surveys show that the job of first-line supervisor is not being eroded and the other hierarchical levels remain intact.

- *job enlargement*. The increasing availability of single operation machines encourages the short-cycle nature of garment manufacturing. Multifunctionality, understood to mean switching between work stations, remains extremely limited. The much-discussed 'standing work' has not taken hold.
- *job integration*. The short-cycle nature of work jeopardises the chances of a far-reaching spread of teamwork and job integration. In the vast majority of companies, the seamstresses do not have to worry about organising, preparatory and supporting tasks. Only a limited number of companies have set up semi-autonomous groups, but their example has, for the time being, not been followed.

The way in which the clothing companies are attempting to reorganise their processes can be termed 'intensification': changes designed to increase the productivity of labour but without major investment or substantial reorganisation of production technique (Massey & Meegan, 1982; Baker, 1993). We would like to point out that, in an international context, Belgian companies are not lagging behind in this respect (Banke & Binder, 1992; Winterton, 1992; Taplin, 1995; Baker, 1996).

The Trend Study methodology does not enable conclusive answers to be given as to 'why' a more radical transformation is not forthcoming. The data gathered only offer an accurate state of affairs regarding organisational innovations and changes in human resource practices. They do not allow pronouncements to be made about the successful and unsuccessful strategies of companies. Nonetheless, we would like to list some possible explanations.

Firstly, it must be noted that the dysfunctions of the Taylorist production concept are only manifested in an environment where the quick response demands apply explicitly. This 'driving force' behind the transformation of the organisation could, however, develop less momentum than generally assumed. In today's crisis atmosphere, that difficult customer who wants to be waited on hand and foot and who is also willing to pay for the pleasure is no longer so much in evidence. Perhaps the changes in the environment are felt less strongly than is often assumed. Possibly companies are able to respond to the environmental complexity using a modified form of Taylorism (lowering costs and finding production flexibility without necessarily developing a self-regulated labour force of skilled, highly trained workers). In this context, it must also be noted that relocation of labour-intensive production phases to low labour cost countries is a feasible alternative to radical organisational transformation for many companies. Here, the crucial question is whether it is worth investing in organisational redesign when the option of moving to a low labour cost country is also a possibility.

Secondly, it must be pointed out that the high labour intensity and continuing stiff competition from low labour cost countries is encouraging many companies to work towards maximum output from the capital invested in man and machinery. Certainly in the start-up phase, forms of modular production and teamwork

demand additional investment. Product oriented modules must after all have more different machines at their disposal to be able to manufacture complete products. Modular production and teamwork also require important changes in the company's human resource practices (Berg et al., 1996). A high degree of communication and co-ordination is required among the seamstresses as they set team goals, solve problems, or resolve conflicts. Seamstresses have to help other team members who are falling behind. This requires seamstresses being able to do a variety of sewing tasks and to operate several types of sewing machines. They also have to assume preparatory, organising and supporting responsibilities. Therefore, teamwork is associated with higher training costs (Osterman, 1995). Given the overwhelming proportion of wage costs in this sector, every training initiative and every temporary reduction in output is difficult to cope with.

Thirdly, the labour market currently exerts little pressure. Changes in the labour market are often referred to as a principal cause of changes in the division of labour. Factors which favour less division of labour include (Berggren, 1992): a low level of unemployment (offering workers alternatives in seeking work); high levels of education among the workers; high levels of social benefits, which in addition are linked to the welfare state and not to the company in which the worker is employed; and low wage differentials between companies, which denies companies the opportunity to compensate for boring work through high wages. Currently, however, such pressures are rather weak in the clothing industry. Although education levels are high this is in itself no guarantee for changes in the division of labour. An abundance of well-trained and experienced workers may facilitate the implementation of new production concepts, but it is not sufficient if other factors intervene. One of these is undoubtedly the ongoing high level of unemployment, which shifts the attention from the 'quality of work' to the 'quantity of work'.

The described trends in market transition and labour market structure can partly explain the 'delayed transformation'. On the other hand, however, research on the effects of innovative work practices has shown that they can improve business performance (Ichniowski et al., 1996; Osterman, 1995). Hence, the question remains: why have these innovative practices not diffused more widely? Are firms in the clothing industry failing to realise the full potential of new production concepts, prisoners as they might be of outmoded system paradigms (Taplin, 1995)? Can the managerial preference for a modified form of Taylorism be explained as an attempt to avoid new 'uncertainties of management' (Streeck, 1987)?

One part of the answer may be due to difficulties in changing managerial practices. Another part to difficulties in changing the traditional employment relationship. More specifically, a move towards less division of labour is not necessarily welcomed by workers and unions, as much of the changes in the division of labour, though tentative, are attempts by management to achieve work intensification - an aspect which is conspicuously absent in the 'post-Fordism'

debate. The allocation of additional responsibilities to production employees is often interpreted as an attempt to fill the few quiet moments. The willingness to take on additional tasks is therefore not always as great, especially when job integration is not remunerated. As far as this remuneration is concerned, the introduction of teamwork also implies a change in wage policy: either a transfer to a fixed wage or the introduction of group wages. In the former case, quick bounty hunters risk a cut in wages. In the latter case, group pressure and social control can lead to the creation of new tensions.

Employees will continue to give multifunctionality and an increase in their responsibilities a lukewarm reception unless they receive some type of compensation - and that is not the immediate intention, since such initiatives are always judged on how successfully they generate a rise in productivity. And this once again undermines the pattern of expectations which has prevailed for several decades. Multifunctional employees, who are required in every production process to compensate for the absence of other employees, rejoice in seeing a bigger amount on their wage slip. Any sensitive expansion in the number of multifunctional employees which retains this wage practice will drive the costs up again.

Moreover, the complexity of traditional job classifications seems to be an important obstacle blocking any initiative in the direction of job integration or multifunctionality. 'Levelling' the job and pay grades will produce winners and losers, unless the whole organisation is 'levelled up', with the extra costs associated with multifunctionality being added to the cost of training. Levelling job and pay grades also blurs clearly-defined positions within the organisation.

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